

## General

### Guideline Title

ACR Appropriateness Criteria® sinonasal disease.

### Bibliographic Source(s)

Cornelius RS, Martin J, Wippold FJ II, Aiken AH, Angtuaco EJ, Berger KL, Brown DC, Davis PC, McConnell CT Jr, Mechtler LL, Nussenbaum B, Roth CJ, Seidenwurm DJ, Expert Panel on Neurologic Imaging. ACR Appropriateness Criteria® sinonasal disease. [online publication]. Reston (VA): American College of Radiology (ACR); 2012. 7 p. [45 references]

### Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Cornelius RS, Wippold FJ II, Brunberg JA, Davis PC, De La Paz RL, Dormont D, Gray L, Jordan JE, Mukherji SK, Nussenbaum B, Seidenwurm DJ, Sloan MA, Turski PA, Zimmerman RD, Expert Panel on Neurologic Imaging. ACR Appropriateness Criteria® sinonasal disease. [online publication]. Reston (VA): American College of Radiology (ACR); 2009. 5 p.

## Recommendations

### Major Recommendations

ACR Appropriateness Criteria®

Clinical Condition: Sinonasal Disease

Variant 1: Acute (<4 weeks) and subacute (4–12 weeks) uncomplicated rhinosinusitis.

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses without contrast	5	Most episodes are managed without imaging as this is primarily a clinical diagnosis. Imaging may be indicated if acute frontal or sphenoid sinusitis is suspected, or if the diagnosis is uncertain.	⚠️⚠️
MRI head and paranasal sinuses without contrast	4	May be useful as part of a general workup for headache.	O
MRI head and paranasal sinuses without and with contrast	2	May be useful as part of a general workup for headache.	O
CT paranasal sinuses with contrast	2		⚠️⚠️
Rating Scale: 1 2 3 Usually not appropriate; 4 5 6 May be appropriate; 7 8 9 Usually appropriate			*Relative

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses without and with contrast			☢☢☢
X-ray paranasal sinuses	1		☢
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 2: Acute and subacute rhinosinusitis in immunodeficient patient.

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses without contrast	7	These patients are at high risk for invasive fungal sinusitis, thus lowering the threshold for imaging.	☢☢
MRI head and paranasal sinuses without contrast	6		O
MRI head and paranasal sinuses without and with contrast	6	See statement regarding contrast in text under "Anticipated Exceptions."	O
CT paranasal sinuses with contrast	5	Contrast and brain imaging are essential if CNS invasion a concern.	☢☢
CT paranasal sinuses without and with contrast	3		☢☢☢
X-ray paranasal sinuses	1		☢
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 3: Acute and subacute rhinosinusitis with associated orbital and/or intracranial complications with ocular and/or neurologic deficit.

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses and orbits without contrast	9	MRI and CT are complementary examinations. Brain imaging is essential if CNS invasion a concern.	☢☢
MRI head and paranasal sinuses without and with contrast	9	MRI and CT are complementary examinations. See statement regarding contrast in text under "Anticipated Exceptions."	O
CT paranasal sinuses and orbits with contrast	8	If this is the only study that can be obtained, it would be appropriate. Contrast and brain imaging are essential if CNS invasion a concern.	☢☢
MRI head and paranasal sinuses without contrast	7	If patient unable to tolerate gadolinium.	O
CT paranasal sinuses and orbits without and with contrast	3	Contrast and brain imaging are essential if CNS invasion a concern.	☢☢☢
X-ray paranasal sinuses	1		☢
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 4: Recurrent acute or chronic rhinosinusitis (possible surgical candidate).

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses without contrast	9	Consider using surgical planning protocol.	☢☢
CT paranasal sinuses with contrast	4		☢☢
CT paranasal sinuses without and with contrast	3		☢☢☢
MRI head and paranasal sinuses without and with contrast	3		O
MRI head and paranasal sinuses without contrast	2		O
X-ray paranasal sinuses	1	May be indicated for planning frontal sinus obliteration.	☢
SPECT paranasal sinuses	1		☢☢☢
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 5: Sinonasal polypsis (if unilateral see variant 6).

Radiologic Procedure	Rating	Comments	RRL*
CT paranasal sinuses without contrast	9		☢☢
MRI head and paranasal sinuses without and with contrast	4	If unilateral disease, see variant 6. See statement regarding contrast in text under "Anticipated Exceptions."	O
MRI head and paranasal sinuses without contrast	4		O
CT paranasal sinuses with contrast	4		☢☢
CT paranasal sinuses without and with contrast	3		☢☢☢
X-ray paranasal sinuses	1		☢
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

Variant 6: Sinonasal obstruction, suspected mass lesion.

Radiologic Procedure	Rating	Comments	RRL*
MRI head and paranasal sinuses without and with contrast	9	MRI and CT are complementary examinations. See statement regarding contrast in text under "Anticipated Exceptions."	O
CT paranasal sinuses without contrast	8	MRI and CT are complementary examinations. Both are frequently needed.	☢☢
CT paranasal sinuses with contrast	6		☢☢
CT paranasal sinuses without and with contrast	6		☢☢☢
MRI head and paranasal sinuses without contrast	5	If patient is unable to tolerate gadolinium.	O
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Arteriography craniofacial Radiologic Procedure	Rating	Comments	RRE*
		Appropriate in selected cases (e.g., vascular involvement, vascular lesion)	
X-ray paranasal sinuses	1		
<b>Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate</b>			<b>*Relative Radiation Level</b>

Note: Abbreviations used in the tables are listed at the end of the "Major Recommendations" field.

## Summary of Literature Review

### Introduction/Background

Sinonasal imaging is performed in two major clinical scenarios: inflammatory rhinosinusitis or a suspected mass lesion.

Rhinosinusitis is defined as inflammation of the nasal cavity and adjacent paranasal sinuses. Acute sinusitis refers to symptom duration <4 weeks, subacute 4 to 12 weeks, and chronic >12 weeks. Complicated sinusitis refers to symptoms suggesting spread of disease into adjacent structures, including orbital or intracranial complications.

Rhinosinusitis is one of the most commonly diagnosed diseases in the United States and appears to affect more than 16% of the U.S. population annually. It poses an immense economic burden, accounting for more than 26 million outpatient visits annually and costing more than \$4.3 billion annually in direct medical expenses. The indirect costs of rhinosinusitis also appear to be staggering, with the number of annual work-loss days estimated at 12.5 million. Studies performed in the 1990s found there were 73 million restricted-activity days related to chronic sinusitis over a 2-year period.

The diagnosis of rhinosinusitis is based on clinical grounds. In 1997, the Task Force of Rhinosinusitis developed major and minor symptomatic criteria for diagnosing rhinosinusitis. Major criteria include nasal drainage, nasal congestion, facial pain or pressure, postnasal drip, and olfactory dysfunction. Minor criteria include fever, cough, fatigue, dental pain, and ear fullness or pressure. Clinical judgment combined with history and physical examination is usually sufficient to diagnose sinusitis in most cases of uncomplicated acute and subacute rhinosinusitis. Imaging studies should be reserved for patients who develop recurrent acute sinusitis, complicated sinusitis, or chronic sinusitis with atypical symptoms, or for defining sinus anatomy prior to surgery. Clinical evaluation combined with nasal endoscopy may obviate the need for computed tomography (CT) imaging in some cases of chronic rhinosinusitis.

### Imaging Modalities

CT is the imaging method of choice for the paranasal sinuses. Coronal CT imaging gives the best overall anatomic detail of the paranasal sinuses and can be achieved either with prone direct coronal imaging or can be reformatted from thin-slice axial images. Contrast enhancement is not generally needed for routine sinus imaging. Sinus radiographs are inaccurate in a high percentage of patients and have been supplanted by CT imaging.

In recent years the use of cone-beam CT has expanded from dental applications to in-office use for sinonasal evaluation. This technique offers advantages of patient convenience and likely some radiation dose reduction, though the true dose reduction in clinical use may be variable. The potential for overuse when scanning is available as an in-office procedure is significant. Strict guidelines for appropriate use should be established by practices offering this technology to avoid unnecessary scans.

Single-photon-emission computed tomography (SPECT) may have a limited role in the evaluation of chronic rhinosinusitis. One study has shown that positive SPECT in patients with chronic rhinosinusitis is correlated with poor subjective response to medical treatment.

Magnetic resonance imaging (MRI) is currently used for evaluation of sinus disease as a complementary study in cases of aggressive sinus infection with ocular/intracranial complications or in the evaluation of a sinonasal mass. Because of its cost, longer imaging time, and lack of bone detail, it has not been considered the imaging method of choice for routine sinus imaging. Recent public health concerns regarding the dramatic and ever-increasing usage of CT imaging and emphasis on reducing medical radiation exposure may lead to consideration of alternative imaging techniques. One study suggests that MRI-based Lund-Mackay scores did not show a statistically significant difference compared to CT-based scores in the same patients.

Sinusitis cannot be diagnosed on the basis of imaging findings alone. Findings on CT scans should be interpreted in conjunction with clinical and endoscopic findings. From 3% to 40% of asymptomatic adults have abnormalities on sinus CT scans, as do more than 80% of those with minor upper respiratory tract infections.

## Fungal Sinusitis

Fungal sinusitis can be seen in both immunocompetent and immunocompromised patients. Immunocompetent patients with chronic sinusitis may develop a superimposed fungal colonization. This is a noninvasive form of fungal disease and may manifest as either a fungus ball (mycetoma) or allergic fungal sinusitis. Invasive fungal sinusitis is a rapidly progressive disease seen in immunosuppressed patients and poorly controlled diabetics. In this patient population, a high index of suspicion should be maintained. Invasive fungal sinusitis has a very high morbidity and mortality rate and requires prompt diagnosis and treatment. In this patient population, both CT and MRI may be needed to fully define the extent of orbital or intracranial extension of disease. CT with contrast may be used to help define orbital and intracranial complications, though more accurate evaluation will be obtained with MRI without and with contrast.

## Sinonasal Polyposis

In patients with known or suspected sinonasal polyposis (including cystic fibrosis patients), sinus CT without contrast is the study of choice. Rarely, in selected cases, evaluation with MRI or contrast-enhanced sinus CT may be needed to help differentiate polypoid mucosal hypertrophy from superimposed sinus fluid and also help to exclude a true underlying soft-tissue mass causing sinus obstruction.

## Suspected Sinonasal Mass

In patients with a suspected sinonasal mass seen on sinus CT or with persistent symptoms of pain, nasal obstruction, or epistaxis, complete evaluation of the extent of disease usually requires both sinus CT and MRI evaluation. CT imaging will best define the pattern of bone erosion/destruction as well as any formation of cartilaginous or bone matrix. MRI without and with contrast will best differentiate soft-tissue mass from postobstructive secretions and will delineate evidence of orbital, skull base, or intracranial extension of tumor. In some instances, craniofacial catheter angiography may be indicated for preoperative planning, for preoperative embolization of a vascular mass, or to treat severe epistaxis.

Image-guided functional endoscopic sinus surgery (FESS) has become widely used. Preoperative CT scanning techniques will be vendor-specific depending on the image-guided system being used.

## Summary

- Most cases of uncomplicated acute and subacute rhinosinusitis are diagnosed clinically and should not require any imaging procedure.
- CT of the sinuses without contrast is the imaging method of choice in patients with recurrent acute sinusitis or chronic sinusitis, or to define sinus anatomy prior to surgery.
- Immunocompetent patients are at high risk for invasive fungal sinusitis. A high index of suspicion for complicated sinusitis should be maintained.
- In patients with suspected sinonasal mass or suspected orbital and/or intracranial complication of sinusitis, MRI and CT are complementary studies.

## Anticipated Exceptions
















Nephrogenic systemic fibrosis (NSF) is a disorder with a scleroderma-like presentation and a spectrum of manifestations that can range from limited clinical sequelae to fatality. It appears to be related to both underlying severe renal dysfunction and the administration of gadolinium-based contrast agents. It has occurred primarily in patients on dialysis, rarely in patients with very limited glomerular filtration rate (GFR) (i.e.,  $<30$  mL/min/1.73 m<sup>2</sup>), and almost never in other patients. There is growing literature regarding NSF. Although some controversy and lack of clarity remain, there is a consensus that it is advisable to avoid all gadolinium-based contrast agents in dialysis-dependent patients unless the possible benefits clearly outweigh the risk, and to limit the type and amount in patients with estimated GFR rates  $<30$  mL/min/1.73 m<sup>2</sup>. For more information, please see the American College of Radiology (ACR) Manual on Contrast Media (see the "Availability of Companion Documents" field).

## Abbreviations

- CNS, central nervous system
- CT, computed tomography
- MRI, magnetic resonance imaging
- SPECT, single-photon-emission computed tomography

## Relative Radiation Level Designations

Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
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Relative Radiation Level*	Adult Effective Dose Estimate Range	Pediatric Effective Dose Estimate Range
	<0.1 mSv	<0.03 mSv
 	0.1-1 mSv	0.03-0.3 mSv
  	1-10 mSv	0.3-3 mSv
   	10-30 mSv	3-10 mSv
    	30-100 mSv	10-30 mSv
*RRL assignments for some of the examinations cannot be made, because the actual patient doses in these procedures vary as a function of a number of factors (e.g., region of the body exposed to ionizing radiation, the imaging guidance that is used). The RRLs for these examinations are designated as “Varies.”		

## Clinical Algorithm(s)

Algorithms were not developed from criteria guidelines.

## Scope

## Disease/Condition(s)

Sinonasal disease

## Guideline Category

Diagnosis

Evaluation

## Clinical Specialty

Family Practice

Internal Medicine

Nuclear Medicine

Otolaryngology

Radiology

## Intended Users

Health Plans

Hospitals

Managed Care Organizations

Physicians

Utilization Management

## Guideline Objective(s)

To evaluate the appropriateness of radiologic examinations for imaging in patients with sinonasal disease

## Target Population

Patients with sinonasal disease

## Interventions and Practices Considered

1. Computed tomography (CT)
  - Paranasal sinuses without contrast
  - Paranasal sinuses with contrast
  - Paranasal sinuses without and with contrast
  - Paranasal sinuses and orbits without contrast
  - Paranasal sinuses and orbits with contrast
  - Paranasal sinuses and orbits without and contrast
2. Magnetic resonance imaging (MRI) head and paranasal sinuses
  - Without contrast
  - Without and with contrast
3. X-ray paranasal sinuses
4. Single-photon emission computed tomography (SPECT) paranasal sinuses
5. Arteriography craniofacial

## Major Outcomes Considered

Utility of radiologic examinations for imaging in patients with sinonasal disease

## Methodology

### Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

### Description of Methods Used to Collect/Select the Evidence

Literature Search Procedure

The Medline literature search is based on keywords provided by the topic author. The two general classes of keywords are those related to the condition (e.g., ankle pain, fever) and those that describe the diagnostic or therapeutic intervention of interest (e.g., mammography, MRI).

The search terms and parameters are manipulated to produce the most relevant, current evidence to address the American College of Radiology Appropriateness Criteria (ACR AC) topic being reviewed or developed. Combining the clinical conditions and diagnostic modalities or therapeutic procedures narrows the search to be relevant to the topic. Exploding the term "diagnostic imaging" captures relevant results for diagnostic topics.

The following criteria/limits are used in the searches.

1. Articles that have abstracts available and are concerned with humans.
2. Restrict the search to the year prior to the last topic update or in some cases the author of the topic may specify which year range to use in the search. For new topics, the year range is restricted to the last 5 years unless the topic author provides other instructions.
3. May restrict the search to Adults only or Pediatrics only.
4. Articles consisting of only summaries or case reports are often excluded from final results.

The search strategy may be revised to improve the output as needed.

## Number of Source Documents

The total number of source documents identified as the result of the literature search is not known.

## Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

### Rating Scheme for the Strength of the Evidence

Strength of Evidence Key

Category 1 - The conclusions of the study are valid and strongly supported by study design, analysis, and results.

Category 2 - The conclusions of the study are likely valid, but study design does not permit certainty.

Category 3 - The conclusions of the study may be valid but the evidence supporting the conclusions is inconclusive or equivocal.

Category 4 - The conclusions of the study may not be valid because the evidence may not be reliable given the study design or analysis.

## Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

### Description of the Methods Used to Analyze the Evidence

The topic author drafts or revises the narrative text summarizing the evidence found in the literature. American College of Radiology (ACR) staff draft an evidence table based on the analysis of the selected literature. These tables rate the strength of the evidence for all articles included in the narrative text.

The expert panel reviews the narrative text, evidence table, and the supporting literature for each of the topic-variant combinations and assigns an appropriateness rating for each procedure listed in the table. Each individual panel member forms his/her own opinion based on his/her interpretation of the available evidence.

More information about the evidence table development process can be found in the ACR Appropriateness Criteria® Evidence Table Development document (see the "Availability of Companion Documents" field).

## Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

### Description of Methods Used to Formulate the Recommendations

Modified Delphi Technique

The appropriateness ratings for each of the procedures included in the Appropriateness Criteria topics are determined using a modified Delphi methodology. A series of surveys are conducted to elicit each panelist's expert interpretation of the evidence, based on the available data, regarding the appropriateness of an imaging or therapeutic procedure for a specific clinical scenario. American College of Radiology (ACR) staff distributes surveys to the panelists along with the evidence table and narrative. Each panelist interprets the available evidence and rates each procedure. The surveys are completed by panelists without consulting other panelists. The ratings are a scale between 1 and 9, which is further divided into three categories: 1, 2, or 3 is defined as "usually not appropriate"; 4, 5, or 6 is defined as "may be appropriate"; and 7, 8, or 9 is defined as "usually appropriate." Each panel member assigns one rating for each procedure per survey round. The surveys are collected and the results are tabulated, de-identified and redistributed after each round. A maximum of three rounds are conducted. The modified Delphi technique



enables each panelist to express individual interpretations of the evidence and his or her expert opinion without excessive bias from fellow panelists in a simple, standardized and economical process.

Consensus among the panel members must be achieved to determine the final rating for each procedure. Consensus is defined as eighty percent (80%) agreement within a rating category. The final rating is determined by the median of all the ratings once consensus has been reached. Up to three rating rounds are conducted to achieve consensus.

If consensus is not reached, the panel is convened by conference call. The strengths and weaknesses of each imaging procedure that has not reached consensus are discussed and a final rating is proposed. If the panelists on the call agree, the rating is accepted as the panel's consensus. The document is circulated to all the panelists to make the final determination. If consensus cannot be reached on the call or when the document is circulated, "No consensus" appears in the rating column and the reasons for this decision are added to the comment sections.

## Rating Scheme for the Strength of the Recommendations

Not applicable

## Cost Analysis

The guideline developers reviewed published cost analyses.

## Method of Guideline Validation

Internal Peer Review

## Description of Method of Guideline Validation

Criteria developed by the Expert Panels are reviewed by the American College of Radiology (ACR) Committee on Appropriateness Criteria.

## Evidence Supporting the Recommendations

### Type of Evidence Supporting the Recommendations

The recommendations are based on analysis of the current literature and expert panel consensus.

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

Selection of appropriate radiologic imaging procedures for evaluation of patients with sinonasal disease

### Potential Harms

Gadolinium-based Contrast Agents

Nephrogenic systemic fibrosis (NSF) is a disorder with a scleroderma-like presentation and a spectrum of manifestations that can range from limited clinical sequelae to fatality. It appears to be related to both underlying severe renal dysfunction and the administration of gadolinium-based contrast agents. It has occurred primarily in patients on dialysis, rarely in patients with very limited glomerular filtration rate (GFR) (i.e.,  $<30$  mL/min/1.73 m<sup>2</sup>), and almost never in other patients. Although some controversy and lack of clarity remain, there is a consensus that it is advisable to avoid all gadolinium-based contrast agents in dialysis-dependent patients unless the possible benefits clearly outweigh the risk, and to limit the

type and amount in patients with estimated GFR rates  $<30 \text{ mL/min/1.73 m}^2$ . For more information, please see the American College of Radiology (ACR) Manual on Contrast Media (see the "Availability of Companion Documents" field).

#### Relative Radiation Level (RRL)

Potential adverse health effects associated with radiation exposure are an important factor to consider when selecting the appropriate imaging procedure. Because there is a wide range of radiation exposures associated with different diagnostic procedures, a relative radiation level indication has been included for each imaging examination. The RRLs are based on effective dose, which is a radiation dose quantity that is used to estimate population total radiation risk associated with an imaging procedure. Patients in the pediatric age group are at inherently higher risk from exposure, both because of organ sensitivity and longer life expectancy (relevant to the long latency that appears to accompany radiation exposure). For these reasons, the RRL dose estimate ranges for pediatric examinations are lower as compared to those specified for adults. Additional information regarding radiation dose assessment for imaging examinations can be found in the ACR Appropriateness Criteria® Radiation Dose Assessment Introduction document (see the "Availability of Companion Documents" field).

## Qualifying Statements

### Qualifying Statements

The American College of Radiology (ACR) Committee on Appropriateness Criteria and its expert panels have developed criteria for determining appropriate imaging examinations for diagnosis and treatment of specified medical condition(s). These criteria are intended to guide radiologists, radiation oncologists and referring physicians in making decisions regarding radiologic imaging and treatment. Generally, the complexity and severity of a patient's clinical condition should dictate the selection of appropriate imaging procedures or treatments. Only those examinations generally used for evaluation of the patient's condition are ranked. Other imaging studies necessary to evaluate other co-existent diseases or other medical consequences of this condition are not considered in this document. The availability of equipment or personnel may influence the selection of appropriate imaging procedures or treatments. Imaging techniques classified as investigational by the U.S. Food and Drug Administration (FDA) have not been considered in developing these criteria; however, study of new equipment and applications should be encouraged. The ultimate decision regarding the appropriateness of any specific radiologic examination or treatment must be made by the referring physician and radiologist in light of all the circumstances presented in an individual examination.

## Implementation of the Guideline

### Description of Implementation Strategy

An implementation strategy was not provided.

## Institute of Medicine (IOM) National Healthcare Quality Report Categories

### IOM Care Need

Getting Better

Living with Illness

### IOM Domain

Effectiveness

# Identifying Information and Availability

## Bibliographic Source(s)

Cornelius RS, Martin J, Wippold FJ II, Aiken AH, Angtuaco EJ, Berger KL, Brown DC, Davis PC, McConnell CT Jr, Mechtler LL, Nussenbaum B, Roth CJ, Seidenwurm DJ, Expert Panel on Neurologic Imaging. ACR Appropriateness Criteria® sinonasal disease. [online publication]. Reston (VA): American College of Radiology (ACR); 2012. 7 p. [45 references]

## Adaptation

Not applicable: The guideline was not adapted from another source.

## Date Released

2009 (revised 2012)

## Guideline Developer(s)

American College of Radiology - Medical Specialty Society

## Source(s) of Funding

The American College of Radiology (ACR) provided the funding and the resources for these ACR Appropriateness Criteria®.

## Guideline Committee

Committee on Appropriateness Criteria, Expert Panel on Neurologic Imaging

## Composition of Group That Authored the Guideline

*Panel Members:* Rebecca S. Cornelius, MD (*Principal Author and Panel Vice-Chair*); Jamie Martin, MD (*Research Author*); Franz J. Wippold II, MD (*Panel Chair*); Ashley H. Aiken, MD; Edgardo J. Angtuaco, MD; Kevin L. Berger, MD; Douglas C. Brown, MD; Patricia C. Davis, MD; Charles T. McConnell Jr, MD; Laszlo L. Mechtler, MD; Brian Nussenbaum, MD; Christopher J. Roth, MD; David J. Seidenwurm, MD

## Financial Disclosures/Conflicts of Interest

Not stated

## Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Cornelius RS, Wippold FJ II, Brunberg JA, Davis PC, De La Paz RL, Dormont D, Gray L, Jordan JE, Mukherji SK, Nussenbaum B, Seidenwurm DJ, Sloan MA, Turski PA, Zimmerman RD, Expert Panel on Neurologic Imaging. ACR Appropriateness Criteria® sinonasal disease. [online publication]. Reston (VA): American College of Radiology (ACR); 2009. 5 p.

## Guideline Availability

Electronic copies: Available from the [American College of Radiology \(ACR\) Web site](#) .

Print copies: Available from the American College of Radiology, 1891 Preston White Drive, Reston, VA 20191. Telephone: (703) 648-8900.

## Availability of Companion Documents

The following are available:

- ACR Appropriateness Criteria®. Overview. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in Portable Document Format (PDF) from the [American College of Radiology \(ACR\) Web site](#) .
- ACR Appropriateness Criteria®. Literature search process. Reston (VA): American College of Radiology; 1 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Evidence table development – diagnostic studies. Reston (VA): American College of Radiology; 2013 Nov. 3 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Radiation dose assessment introduction. Reston (VA): American College of Radiology; 2 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Manual on contrast media. Reston (VA): American College of Radiology; 90 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria®. Procedure information. Reston (VA): American College of Radiology; 1 p. Electronic copies: Available in PDF from the [ACR Web site](#) .
- ACR Appropriateness Criteria® sinonasal disease. Evidence table. Reston (VA): American College of Radiology; 2012. 12 p. Electronic copies: Available from the [ACR Web site](#) .

## Patient Resources

None available

## NGC Status

This NGC summary was completed by ECRI Institute on May 26, 2010. This summary was updated by ECRI Institute on January 13, 2011 following the U.S. Food and Drug Administration (FDA) advisory on gadolinium-based contrast agents. This NGC summary was updated by ECRI Institute on October 12, 2012.

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